H. S. HEICHERT.

APPARATUS FOR MAKING PLASTER BOARD.

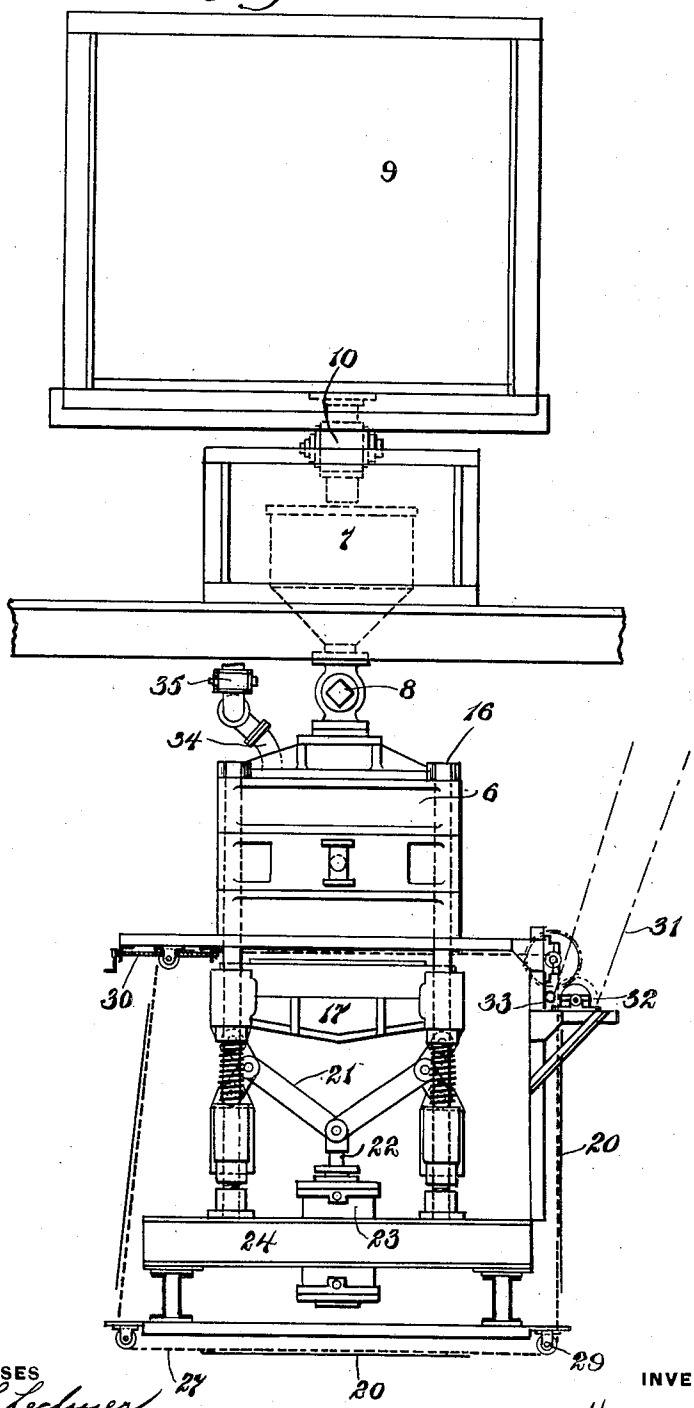
APPLICATION FILED JUNE 1, 1909.

1,023,934.

Patented Apr. 23, 1912.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

Harry L. Lechner

Archibald B. Martin

INVENTOR

Herman S. Heichert

by atty

Paul Symmestvedt

H. S. HEICHERT.

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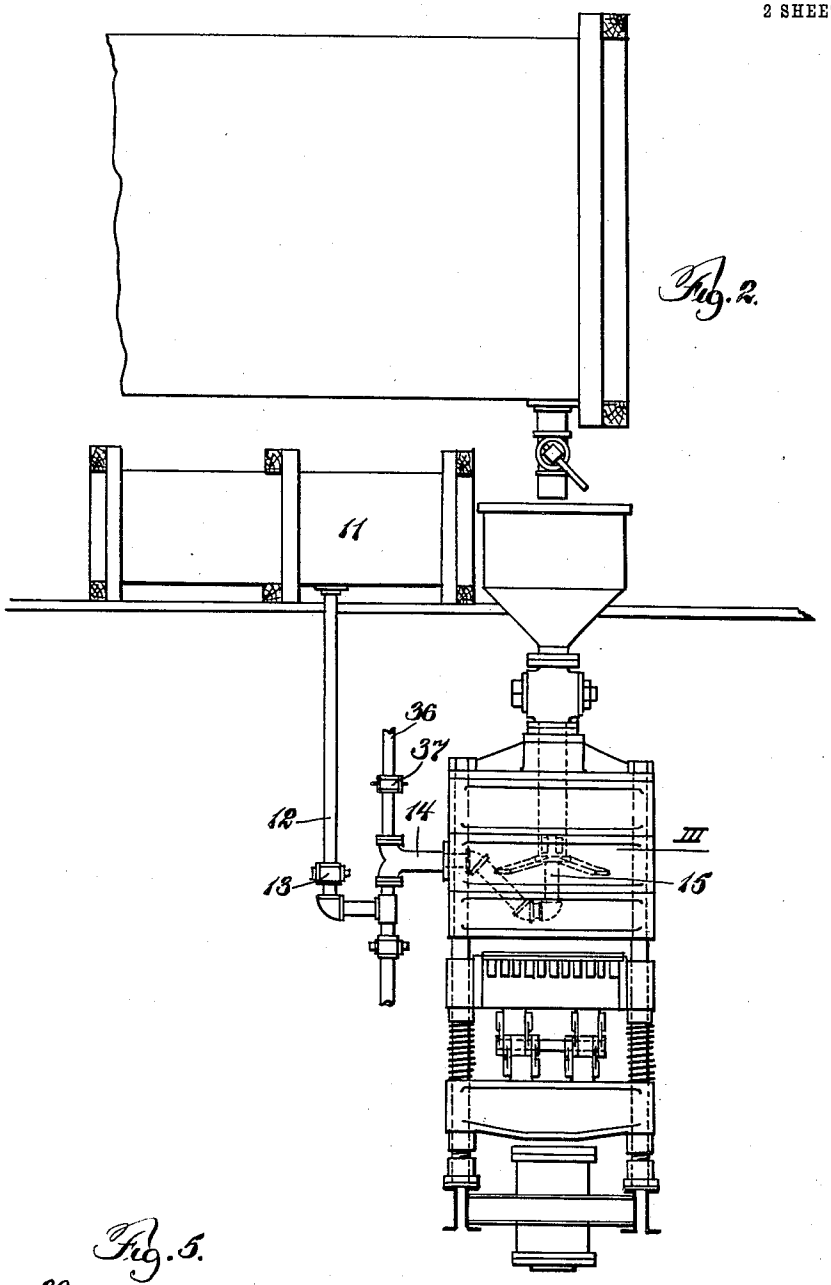


Fig. 2.

Fig. 5.

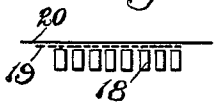


Fig. 3.

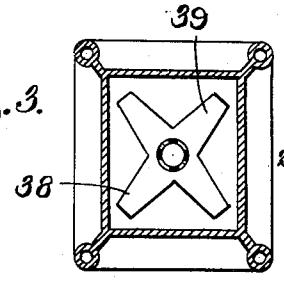
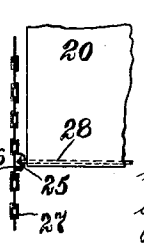


Fig. 4.



WITNESSES

Harvey L. Lechner

Archworth Martin

INVENTOR

Herman S. Heichert

by atty

Paul Synnestvedt

UNITED STATES PATENT OFFICE.

HERMAN S. HEICHERT, OF FORD CITY, PENNSYLVANIA, ASSIGNOR TO PITTSBURGH PLATE GLASS COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

APPARATUS FOR MAKING PLASTER-BOARD.

1,023,934. Specification of Letters Patent. Patented Apr. 23, 1912.

Application filed June 1, 1909. Serial No. 499,596.

To all whom it may concern:

Be it known that I, HERMAN S. HEICHERT, a citizen of the United States, residing at Ford City, in the county of Armstrong and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Making Plaster-Board, of which the following is a specification.

This invention has reference to an improved form of apparatus for the manufacture and continued handling of plaster board such as is used for the construction of dwellings, and of other like products, made preferably of a composition of plaster of Paris or calcined gypsum, a small quantity of cement, wood fiber, and a sufficient amount of water—there being sometimes used other ingredients, but most generally in combination with those specifically enumerated.

This invention has to do further with the formation of plaster board from materials of this kind, by means of what is called a fluid press or fluid pressure device, the substances being held in the press in suspension and forced into position to form the board by deposition upon a suitable screening surface, through the action of air or other fluid pressure, the amount of pressure employed being approximately 75 pounds to the square inch.

The first of the objects of my present invention is the improvement of the press apparatus by the introduction of certain details of construction whereby a greater facility and cheapness of operation are secured, and the employment and construction of suitable cloth or other fibrous screening means adapted to be used in conjunction with wire screen and grating, and the construction of improved means for handling and renewing and taking care of the cloth, all as will more clearly appear from an examination of the accompanying drawings, wherein—

Figure 1 represents in side elevation an apparatus embodying my improvement;

Figure 2 is another view in elevation of the apparatus shown in Figure 1;

Figure 3 is a detail sectional view on the line III—III of Figure 2;

Figure 4 indicates a detail of the construction of the cloth or muslin carrying means, and

Figure 5 is a small sectional detail indicating the relation of the muslin and other screening parts.

Referring now more particularly to Figure 1, it will be seen that I have therein shown the press itself indicated at 6, provided with a hopper 7 which holds the charge before it is discharged into the press through the admission valve or mixture inlet valve 8.

Above the hopper is a suitable pulp-holding tank 9 with inlet valve 10 therefor, and adjacent the hopper is a water tank 11 shown on Figure 2, with water pipes 12 and inlet controlling valve 13 connecting by means of the pipe 14 with the upturned discharge nozzle 15 within the press, through which the water is supplied to the interior of the press.

Referring now again to Figure 1, it will be observed that the press is provided with the strain rods 16 adapted to strengthen and support the parts, and with a cross bar 17 formed in a kind of open frame upon which rests a grating 18 the top of which latter is covered in turn by a fine wire netting 19 adapted to form a support for the final screening surface or device which is preferably the muslin or cloth 20. As a means for raising and lowering the frame-work I provide the system of levers 21 formed in toggle shape and connected to a piston rod 22 that is actuated by a piston within the cylinder 23, through the instrumentality of suitable fluid pressure. The various parts last described are mounted upon structural work 24, in position as indicated in Figures 1 and 2.

The muslin or cloth screen 20 is cut into sections or sheets as indicated in Figure 1, and said sheets are provided at their corners with hooks 25 engaging suitable lugs 26 in carrying chains 27, as shown in Figure 4. The cloth or muslin 20 is held tight by means of the cross-bar or rod 28 and the catch devices referred to, and being made thus in sections if any section wears out or becomes stopped up with plaster, or for other cause has to be removed, it can be taken out of the machine and a new one

quickly substituted without the necessity of interfering with the action of the whole machine or for any length of time stopping the operation in the manufacture of the board. As indicated in Figure 1, I have shown four such muslin cloths carried by the pair of chains 27 running around the pulleys 29, and the said chains are provided with an adjusting device 30 designed to regulate and maintain the tension of the same at all times. It will be understood that the term cloth is used in its generic sense to designate any and all kinds of sheets of interwoven flexible material capable of catching the solid particles while permitting the water to pass readily therethrough. As a means for moving the chain and attached cloth I provide a belt 31, and at some suitable point I arrange a cleaning brush 32 and a device 33 for spraying water upon the muslin to clean out of the interstices thereof the deposits of plaster.

In order to admit air to the chamber of the press I provide an air inlet pipe 34 having the controlling valve 35, and as a means for forcing the water out of the pipe 14 and nozzle 15, I also provide a supplemental air pipe 36 controlled by the valve 37. The air inlet 36 alone could be used if desired.

In order to get a more uniform distribution of the material upon the screening surfaces within the press I provide what I call a deflector (indicated in Figure 3 by the reference numeral 38), said deflector having preferably four arms directed toward the corners of the press, said arms being located under four apertures marked 39, so that when the material comes down through the supply pipe and is discharged through the apertures 39 it will strike the deflector arms and be carried somewhat toward the corners of the press and thus insure a more uniform distribution upon the surface of the screening cloth.

The pressure within the cylinder 23 is of course to be controlled by any suitable valve mechanism conveniently located, and the operation of the driving mechanism is also to be under control of the operator of the machine, through suitable levers or other clutch devices of well known construction.

The operation of my improved mechanism is as follows:

A suitable mixture having been placed within the hopper 7 and in sufficient quantity to form one board, the pulp valve 10 is closed, and the valve 13 for admitting water to the press is opened, after which, and almost simultaneously therewith, the mixture inlet valve 8 is opened and then quickly closed, allowing the mixture to fall from the hopper into the pressure chamber immediately after and during the time that the water inflows, it being desirable, however, to have a small amount of water admitted first to spread over the surface of the muslin which is in position under the pressure chamber and has been raised up into place by the upward movement of the toggles 21 and the cross-frame 17, the small amount of water first admitted serving to distribute the mixture more evenly and form a more uniform thickness of board. After the mixture has fallen from the hopper into the chamber, and the valve 8 has been closed, the air inlet valve 35 is opened, allowing the pressure to come in on top of the mixture and water in the pressure chamber and driving the water down through the screening apparatus, depositing the solid matter upon the upper surface of the muslin cloth 20 which is in position in the machine. When the water is all pressed through, the air valve is closed and what air is in the machine is allowed to escape, after which the pressure in the cylinder 23 is removed and the cross-frame 17 descends, freeing the board that has been formed upon the upper one of the muslin sheets 20 and allowing the movement of the cloth screen carried by the chains 27, which is now instituted, to carry the board laterally along out of the press, and onto an adjoining conveying apparatus not here shown.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent, is the following:

1. An apparatus for forming plaster board and the like, comprising, a pressure chamber, a foraminous screen therebeneath, a carrier movable over the screen, and a series of removable cloth screens detachably secured to the carrier.

2. An apparatus for forming plaster board, comprising in combination, a pressure chamber, a screening device at the bottom of said pressure chamber, means for supplying mixture to said pressure chamber, and a fixed baffle member above the screening device for receiving and spreading the mixture.

3. A movable screening device for plaster board forming apparatus, comprising in combination, a pair of traveling or advanceable chains, and a series of muslin or cloth screening parts secured upon said chains, substantially as described.

4. An apparatus for forming plaster board and the like, comprising a pressure chamber, a screening device at the bottom of the chamber, cross arms above the screening device, and a pipe thereabove for admitting the mixture for forming the article, said pipe having at its lower end lateral openings arranged to discharge the mixture onto the said arms.

5. An apparatus for forming plaster board and the like comprising, a fixed pres-

sure chamber provided with a reciprocable foraminous bottom member, means for supplying pressure to the said chamber, power means for raising the said bottom member, and a cloth screen mounted for movement over the said bottom member.

In testimony whereof I have hereunto signed my name in the presence of the two subscribed witnesses.

HERMAN S. HEICHERT.

Witnesses:
HARVEY L. LECHNER,
ARCHWORTH MARTIN.